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DEPARTMENT OF NOTES, REVIEWS, ETC.

It is the purpose, in this department, to present from time to time brief original notes, both of methods of work and of results, by members of the Society. All members are invited to submit such items. In the absence of these there will be given a few brief abstracts of recent work of more general interest to students and teachers. There will be no attempt to make these abstracts exhaustive. They will illustrate progress without attempting to define it, and will thus give to the teacher current illustrations, and to the isolated student suggestions of suitable fields of investigation.—[Editor.]

ENTOMOLOGICAL NOTES.

Insects and Flowers.—Lovell ('14, Journ. Animal Behavior, 4:147-175) describes the results of observations and experiments on "Conspicuous Flowers rarely visited by Insects." Bright coloration, or odor, or both are the usual characters of entomophilous plants and both are useful in attracting the attention of insects. Absence of either or both of these allurements will not necessarily cause the neglect of a flower provided it contains a considerable amount of pollen or nectar. Experiments afforded no evidence that bees visit flowers in order to satisfy an "aesthetic" sense. Neglected conspicuous cultivated flowers are occasionally visited by insects, especially bees, but absence or scantiness of food inhibits repetition of visits, even though it be pleasantly scented. Odoriferous fruit juices introduced into conspicuous, commonly neglected flowers attract miscellaneous insects, particularly Diptera, but it must not be inferred that the color is of no advantage and that an attractive odor is required since the introduction of an odorless syrup into similar flowers will induce numerous insect visits; furthermore, if in flowers in which the nectar is inaccessible to honey-bees, and consequently not visited by them, the nectaries be artifically punctured or the floral tubes be shortened by drouth they are then visited by great numbers of bees. Flowers freely secreting nectar in one locality are sometimes destitute of nectar in a different locality; in such cases the former are visited by numerous insects while the latter are almost neglected. "Insects, therefore, perceive the colors and forms of neglected flowers, and the rarity of their visits is the result of their memory of the absence of food materials, not because the flowers lack an agreeable odor, which is often not the fact." * * * Since flowers possessing conspicuousness, an agreeable odor, and a liquid food were opposed to flowers possessing only conspicuousness, it is clear that color was never directly brought into competition with odor—the latter was invariably given the advantage. Colors and odors attract the attention of insects, but bees in their visits to flowers, previously examined by them, are guided largely by the memory of past experience; they are able to associate different sense impressions and unconsciously make analogous inferences."

Origin of Keimbahn-Determinants.—Hegner ('14, Anatomischer Anzeiger, 46:51-69) presents a paper entitled "Studies on Germ Cells. III. The Origin of the Keimbahn-Determinants in a Parasitic Hymenopteron, Copidosoma." A peculiar inclusion almost uniformly appears in the cytoplasm of the egg at or near the time of maturation in animals where early segregation of germ cells has been demonstrated, and is of special interest since it has been found to be an accurate means whereby the germ tract can be determined during embryonic development. These determinants have been found in Sagitta, Crustacea, and Insecta (Diptera, Coleoptera and Hymenoptera). Studies on Copidosoma showed that the "nucleolo" of Silvestri which serves as a keimbahn-determinant "consists of the entire chromatin content of an oöcyte nucleus," and has been named the keimbahn-chromatin. The history of the latter seems to have the following course: Chromatin of young oöcytes form a spireme which breaks up into chromosomes, the latter uniting in pairs at or near their ends and then become associated with an asterless spindle, the gradual concentration and condensation of which results in the formation of an almost spherical mass of chromatin. This mass becomes located near the posterior pole of the egg. Each egg of Copidosoma consists of two oöcytes which have united end to end, the posterior member being the older and containing the keimbahn-chromatin only, while the anterior member has a spindle which breaks down and transforms into a resting nucleus.

Ceratitis Capitata and Kerosene.—Severin and Severin ('14, Journ. Animal Behavior, 4:223-227) have made some interesting observations and experiments on the "Behavior of the Mediterranean Fruit Fly (*Ceratitis capitata*) towards Kerosene." These insects are attracted to exposed kerosene, the sense of smell probably being the determining factor. Tests showed that the number of flies caught was not influenced by the color of the container. Of the total number of individuals taken 5461 were males and 30 were females, and the evidence is strongly in favor of the view that the attraction of the fly to the kerosene is confined almost entirely to the male sex. It is also very probable that the reaction of the male fly to kerosene is independent of the food habits. The data does not permit of a definite interpretation of this difference in behavior of the two sexes but a preference is expressed for the view that the smell might resemble some odor of the female which serves to guide the males to her.

Light Reactions of Dermestidæ.—Woodsedalek ('13, Journ. Animal Behavior, 3:61-64) presents the results of a study of "The Reactions of Certain Dermestidæ to Light in different Periods of their Life History." In a previous paper this writer showed that *Trogoderma tarsale,* a dermestid which infests museums, is negatively phototactic continuously from time of hatching until the eggs are deposited, after which the individuals of both sexes become indifferent to light and then positively phototactic. In the present paper the results of a similar study on two other species of dermestids, namely, the carpet beetle or "buffalo moth" *(Anthrenus scophulariæ)* and the black carpet beetle *(Attagenus piceus)* are recorded. Experiments on light reaction were performed on the former and, as in the case of *T. tarsale,* it was found that from the hatching of the eggs through metamorphosis to the emergence of adults and the deposition of eggs all stages are continuously negatively phototactic. Shortly after eggs are deposited the female reverses her reaction to light and males also completely reverse their reaction during the latter part of their lives. A very large number of specimens collected out of doors from the blossoms of Spiraea were tested for eggs but in no case did these adults contain or deposit eggs; furthermore copulation was never observed. This evidence points strongly to the conclusion that adults of this species deposit eggs before they desert the houses and take to flowers. The more limited observations and experiments on the other species (*Attagnus piceus*) show that it behaves practically the same in its phototactic reactions.

Beetles Becoming Parasites.—Kellogg ('14, Science, 39:360-361) reports on "Beetles becoming Parasites." Of the great host of Coleoptera only very rare instances of parasitism are known in spite of the fact that the great number of species and the many evidences of ready plasticity and adaptiveness seem to offer opportunities for the development of parasites in this order. The beaver parasite, *Platypsylla castoris,* passes both larval and adult stages on the host. *Leptinus testaceous,* which frequents the nests of field mice, shrews and other small mammals of similar habit, and bumblebees, has been taken from the bodies of shrews killed in Alaska. *Leptinillus validus* occurs on beavers in the Hudson Bay region. *Lyrosoma opaca,* found on the islands of the North Pacific, occurs in the tenanted nests of the murres.

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PRACTICAL PHOTO-MICROGRAPHY.

In this book the author seeks in a straight-forward way to give such a description of the apparatus and methods for making photographs of microscopic objects that the reader may find it a practical guide to his own work and not merely a scientific statement of the facts. The work is based directly on practical experience.

More space is given to the description of cameras and their construction and use than to the microscope, because of the existence of numerous books dealing with the latter.

Chapter I is an introductory chapter, recounting some of the steps in the development of the art of photo-micrography. Reference is made to improvements in the microscope and in the making and staining of preparations, to the development of the dry plate, and to the perfection of the methods of reproducing photographs for illustrations.